

What is Claimed:

- 1 1. A method for improving the overall process efficiency of sulfate
2 sulfite, or alcohol pulping, pulp washing or pulp bleaching comprising the step of:

3 removing high molecular weight organic by-products from any liquor or
4 filtrate stream withdrawn from a process step by passing said liquor or filtrate stream
5 through a filtration media that will trap said high molecular weight organic by-
6 products.
- 1 2. A method according to claim 1 including the step of reusing said
2 liquor or said filtrate stream in said process.
- 1 3. A method according to claim 1 including the step of using
2 membrane separation to remove said high molecular weight organic by-products.
- 1 4. A method for improving the overall efficiency of the digesting
2 step of a wood fiber pulping process comprising the steps of:

3 separating at least a portion of liquor from wood pulp at one of, during
4 or after said digesting step and passing said liquor through a filtration media to remove
5 high molecular weight organic by-products from said liquor; and

6 returning said liquor containing a lower concentration of high molecular
7 weight organic by-products to said digesting step.
- 1 5. A method according to claim 4 including the step of using
2 membrane separation to remove said high molecular weight organic by-products from
3 said liquor.
- 1 6. A method according to claim 4 including the step of recovering
2 pulp by washing an effluent from said digesting step, separating washing fluid from
3 said washing step and passing said washing fluid through a filtration media to remove
4 high molecular weight organic by-products from said washing fluid.

1 7. A method according to claim 4 including the step of recycling
2 said washing fluid to said washing step after said high molecular weight organic by-
3 products have been removed.

1 8. A method for improving the overall efficiency of the digesting
2 step of a Kraft pulping process comprising the steps of:

3 separating at least a portion of black liquor from wood pulp at one of
4 during or after a digesting step and passing said black liquor through a filtration media
5 to remove high molecular weight organic by-products from said liquor and returning
6 said black liquor containing a lower concentration of high molecular weight organic by-
7 products to said digesting step.

1 9. A method according to claim 8 including the step of using
2 membrane separation to remove said high molecular organic by-products from said
3 liquor.

1 10. A method according to claim 8 including the step of recovering
2 pulp by washing an effluent from said digesting step, separating washing fluid from
3 said washing step and passing said washing fluid through a filtration media to remove
4 high molecular weight organic products from said washing fluid.

1 11. A method according to claim 10 including the step of recycling
2 said washing fluid to said washing step after said high molecular weight organic by-
3 products have been removed.

1 12. A method for improving the overall efficiency of sulfite pulping
2 process comprising the steps of:

3 separating at least a portion of liquor from wood pulp at one of during or
4 after a digesting step and passing said liquor through a filtration media to remove high
5 molecular by-products from said liquor, and returning said liquor containing a lower
6 concentration of high molecular weight organic by-products to said digesting step.

7 13. A method according to claim 12 including the step of using
8 membrane separation to remove said high molecular by-products from said liquor.

1 14. A method according to claim 13 including the step of separating
2 cooked pulp from said liquor by a washing step.

1 15. A method according to claim 14 including the step treating
2 washing fluid separate from said liquor passing said washing fluid through a filtration
3 media to remove high molecular weight organic by-products from said washing fluid.

1 16. A method according to claim 15 including the step of recycling
2 said washing fluid to said washing step after said high molecular weight organic by-
3 products have been removed.

1 17. A method for improving the efficiency of a wood pulping process
2 using a continuous digester comprising the step of incorporating into any digesting
3 liquor recirculating system a filtration media to remove high molecular weight organic
4 by-products from said recirculating liquor.

1 18. A method for improving the efficiency of a wood pulping process
2 using a displacement batch digester comprising the step of incorporating into a digester
3 liquor recirculating system in filtration media to remove high molecular weight organic
4 by-products from said recirculating liquor.

1 19. A method for improving the efficiency of a wood pulping process
2 incorporating storage of spent liquor comprising the step of: passing one of, said liquor
3 entering said storage facility, said liquor being withdrawn from said storage facility, or
4 said liquor both entering and being withdrawn from said storage facility to a filtration
5 step to remove high molecular weight organic by-products from said liquor.

1 20. A method for improving the efficiency of a wood pulping process
2 incorporating accumulation of spent liquor comprising the step of: passing one of said
3 liquor entering said accumulation facility, said liquor being withdrawn from said
4 accumulation facility, or said liquor both entering and being withdrawn from said
5 accumulation facility, to a filtration step to remove high molecular weight organic by-
6 products from said liquor.

1 21. A method for improving the efficiency of a wood pulping process
2 incorporating dilution of pulp comprising the step of:

3 withdrawing a one of liquor or filtrate containing high molecular weight
4 organic by-products from any process step;

5 passing said filtrate through a filter media to remove high molecular
6 weight organic by-products to yield a treated filtrate with a lower concentration of
7 colloidal and/or high molecular weight organic by-products, and

8 using said treated liquor or filtrate in any dilution zone, pipe or
9 equipment in said pulping process to dilute said pulp.

1 22. A method for improving the efficiency of a wood pulping process
2 including fiber washing comprising the steps of: separating a washing liquid from said
3 washed fibers, passing said washing liquid through a filtration media to remove high
4 molecular weight organic by-products from said washing liquid to produce a clean
5 washing liquid, and using said clean washing liquid as a washing liquid.

1 23. A method for improving the efficiency of a wood pulping process
2 that includes oxygen as a delignification stage proceeded by and followed by washing
3 of pulp comprising the steps of:

4 separating washing fluid from said pulp after one of any of the washing
5 steps proceeding, or any of the washing steps following said oxygen delignification
6 step, passing said separated washing fluid from said pulp through a filtration media to
7 remove high molecular weight organic by-products from said washing fluid to produce
8 a cleaned washing fluid, and using said cleaned washing fluid in any one of any
9 washing operation or to dilute said pulp prior to after or during oxygen delignification.